

TOPICS:

- ✓ **Variations and Genetics/Inheritance**
- ✓ **Chromosomes and DNA**

Q.1 Position of a gene on the chromosome is called its:

- A. Phenotype
B. Locus
C. Primary constriction
D. Genotype

Q.2 Pea plants were particularly well suited for use in Mendel's breeding experiments for all of the following reasons except:

- A. Peas show easily observable variations in a number of characters
B. It is possible to control mating between different pea plants
C. It is possible to obtain large numbers of progeny from any given cross
D. Peas have an unusually long generation time

Q.3 What was the most significant conclusion that G. Mendel drew from his experiments with pea plants?

- A. There is considerable genetic variation in garden peas
B. Traits are inherited in discrete units and are not the results of blending
C. Recessive genes occur more frequently in the F₁ than do dominant ones
D. An organism that is homozygous for many recessive traits is at a disadvantage

Q.4 When crossing an organism that is homozygous recessive for a single trait with a heterozygote, what is the chance of producing an offspring with the homozygous recessive phenotype?

- A. 0% B. 25%
- C. 50% D. 75%

Q.5 The gene for ABO-blood group system in humans is represented by symbol:

- A. X
C. I
- B. Y
D. O

Q.6 The genes of blue opsins are present on:

- A. Autosome 9
B. Autosome 1
C. Autosome 7
D. Autosome 3

Q.7 Blood group AB is an example of _____.

- A. Complete dominance
B. Incomplete dominance
C. Co-dominance
D. Recessive alleles

Q.8 Gene for albinism in man is present on chromosome number:

- A. 11
C. 22
- B. 23
D. 12

0.9 When a disease is transmitted directly from an affected father to his son, it is called:

- A. X-linked B. Y-linked
C. Autosomal D. X and Y-linked

Q.10 All the alleles present in the gametes of a sexually reproducing population are known as the population's:

- A. Gene frequency
B. Genome
C. Gene pool
D. Genotype

Q.11 An interaction between two alleles having single locus for a single trait can be labeled as:

- A. Pleiotropy
B. Dominance
C. Epistasis
D. Polygene

Q.12 Chances for a man to be affected by haemophilia C is:

- A. Greater than woman
B. Lesser than woman
C. Equal to woman
D. Not predictable

Q.13 A woman can suffer from hemophilia 'A' if she is:

- A. Homozygous dominant
B. Homozygous recessive
C. Heterozygous dominant
D. Hemizygous recessive



- Q.14** If a woman carrier for hemophilia marries a normal man, then:
A. All sons will suffer from hemophilia
B. All daughters will suffer from hemophilia
C. Half sons and half daughters will suffer from hemophilia
D. All statements are incorrect
- Q.15** How many colors can be perceived by a monochromat?
A. 1
B. 3
C. 2
D. 4
- Q.16** Protanopia is _____ colour blindness.
A. Red
B. Blue
C. Green
D. White
- Q.17** All altered alternative forms of a gene, whose number is more than two are called:
A. Co dominant alleles
B. Jumping genes
C. Multiple alleles
D. Homozygous
- Q.18** An allele is recessive if it is expressed in:
A. F_1 generation
B. Homozygous combination and heterozygous combination
C. Homozygous combination only
D. Heterozygous combination
- Q.19** The haploid chromosome number in pea is:
A. 8
B. 10
C. 7
D. 14
- Q.20** Mendel's dihybrid cross ratio is:
A. 3:1
B. 1:1:1:3
C. 9:3:3:1
D. 3:1:1:2
- Q.21** Which of the following is not a genetic disorder?
A. Hemophilia
B. Colour blindness
C. Phenylketonuria
D. Epilepsy
- Q.22** All of the following are non-allelic X-linked traits in males except:
A. Hemophilia A
B. Hemophilia C
C. Hemophilia B
D. TFM syndrome
- Q.23** All of the following are true about Bombay phenotype except:
A. Glycosyltransferases
B. Have I^A or I^B genes
C. Antigen A or B can't adhere to RBCs
D. Genotypically 'O'
- Q.24** In the human ABO blood group system, there are six possible genotypes but only four phenotypes. An explanation of this is that ABO blood groups are controlled by:
A. One gene with two alleles
B. One gene with three alleles
C. Two genes with two alleles
D. One gene with one allele
- Q.25** A girl has blood group A and her brother has blood group B. Which combination of genotypes cannot belong to their parents?

	Mother	Father
A.	$I^A i$	$I^B i$
B.	$I^A I^B$	$I^A I^B$
C.	ii	$I^A I^B$
D.	ii	$I^A i$

- Q.26** Which of the following helps to stabilize mRNA by inhibiting its degradation?
A. TATA box
B. Operator site
C. 5' cap and 3' poly-A tail
D. Conserved sequences
- Q.27** Which of the following symptom is not related to erythroblastosis foetalis?
A. Jaundice
B. Respiratory blockage
C. Hemolytic Anemia
D. High level of bilirubin
- Q.28** The recombination frequencies between two linked genes can be calculated by:
A. Test cross
B. Back cross
C. Reciprocal cross
D. Original cross
- Q.29** The structural unit of chromosome is:
A. Nucleosome
B. Heterochromatin
C. Euchromatin
D. DNA



- Q.30 Name the one involved in DNA replication:**
A. Cysts B. Mesosomes
C. Ribosomes D. Spores
- Q.31 Enzyme which attaches the Okazaki fragments in lagging strand is called:**
A. Restriction endonuclease B. DNA helicase
C. Primase D. DNA ligase
- Q.32 If one were to unzip the molecule, one would need only to assemble the appropriate complementary nucleotides on the exposed single strand to form two daughter complexes with the same sequence” is the definition of:**
A. Semi-conservative model B. Dispersive model
C. Conservative model D. Destruction model
- Q.33 Meselson and Stahl transferred few bacteria grown in N^{15} medium to N^{14} medium for replicating their DNA. What would be the result after two rounds of replication?**
A. 50% hybrid duplex and 50% light duplex B. 50% hybrid duplex and 50% heavy duplex
C. 100% heavy duplex D. 100% hybrid duplex
- Q.34 Formation of RNA from DNA is called:**
A. Translation B. Replication
C. Transcription D. Reverse transcription
- Q.35 The process of replication of DNA begins at:**
A. One place only without any specific sequence of DNA
B. One or more places without any specific sequence of DNA
C. Any place with the uncoiling of two strands of DNA
D. One or more places where there is a specific sequence of nucleotides
- Q.36 Who confirmed semi-conservative model of DNA replication?**
A. Watson and Crick B. Rosalind Franklin
C. Meselson and Stahl D. Maurice Wilkins
- Q.37 Three nucleotide sequence on tRNA that specifies an amino acid is:**
A. Codon B. Anticodon
C. Nonsense codon D. Genetic code
- Q.38 Initiation complex in translation is composed of:**
A. Ribosome and aminoacyl-tRNA B. Ribosome and tRNA
C. tRNA and aminoacyl-tRNA D. tRNA and amino acids
- Q.39 Strand of DNA which is not transcribed is called:**
A. Antisense B. Template
C. Coding D. Non-coding
- Q.40 Which of the following can kill mice if injected separately?**
A. Live R-type *pneumococcus* B. Heat killed R-type *pneumococcus*
C. Live S-type *pneumococcus* D. Heat killed S-type *pneumococcus*
- Q.41 In semi-conservative replication of DNA:**
- | | Primary structure | Secondary structure | Duplex |
|----|-------------------|---------------------|---------------|
| A. | Conserved | Conserved | Conserved |
| B. | Not conserved | Not conserved | Not conserved |
| C. | Not conserved | Conserved | Conserved |
| D. | Conserved | Not conserved | Not conserved |
- Q.42 Total nucleotides appear at P site at any time?**
A. Two B. Three
C. Six D. Two groups
- Q.43 Which of the following key enzyme, responsible for the conversion of primary structure of DNA into secondary structure during DNA replication?**
A. DNA Helicase B. DNA polymerase
C. DNA Ligase D. RNA Primase
- Q.44 $5' \rightarrow 3'$ working is the property of all of the following enzymes except?**
A. DNA polymerase B. RNA polymerase
C. Primase D. DNA Ligase
- Q.45 Recognize the first step of transcription from the following:**
A. Formation of transcription bubble B. Release of sigma factor
C. Unwinding of DNA duplex D. Binding of sigma factor with promoter



- Q.46** In a cross $AaBb \times AaBb$, what is the probability of producing the genotype $AABB$?
 A. $1/8$ B. $1/16$
 C. $1/32$ D. $1/64$
- Q.47** **SRY** is best described in which of the following ways?
 A. A gene region present on Y-chromosome that triggers male development
 B. A gene present on the X-chromosome that triggers female development
 C. An autosomal gene that is required for the expression of genes on the Y-chromosome
 D. An autosomal gene that is required for the expression of genes on the X-chromosome
- Q.48** New combinations of linked genes are due to which of the following?
 A. Non-disjunction B. Crossing over
 C. Independent assortment D. Mixing of sperm and egg
- Q.49** In mitochondria, UGA specifies:
 A. Stop codon B. Tryptophan
 C. Initiation codon D. Methionine
- Q.50** Which of the following statements describes the eukaryotic chromosome?
 A. It is composed of DNA alone
 B. The nucleosome is its most basic functional subunit
 C. It consists of a single linear molecule of ds-DNA
 D. Active transcription occurs on heterochromatin

ENGLISH

1 - C	11 - B	21 - D
2 - D	12 - A	22 - C
3 - A	13 - A	23 - A
4 - D	14 - B	24 - D
5 - B	15 - B	25 - C
6 - A	16 - B	26 - C
7 - C	17 - A	27 - C
8 - D	18 - C	28 - B
9 - A	19 - A	29 - A
10 - A	20 - D	30 - C

BIOLOGY

1 - B	11 - B	21 - D	31 - D	41 - D
2 - D	12 - C	22 - B	32 - A	42 - B
3 - B	13 - B	23 - D	33 - A	43 - B
4 - C	14 - D	24 - B	34 - C	44 - D
5 - C	15 - A	25 - D	35 - D	45 - D
6 - C	16 - A	26 - C	36 - C	46 - B
7 - C	17 - C	27 - B	37 - B	47 - A
8 - A	18 - C	28 - B	38 - A	48 - B
9 - B	19 - C	29 - A	39 - C	49 - B
10 - C	20 - C	30 - B	40 - C	50 - C